

APPLICANT(S): SHIMADA, Ryo
SERIAL NO.: 10/688,950
FILED: October 21, 2003
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REMARKS

The present response is intended to be fully responsive to all points of objection and/or rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application are respectfully requested.

Applicant asserts that the present invention is new, non-obvious and useful. Prompt consideration and allowance of the claims are respectfully requested.

Status of Claims

Claims 1-20 are pending in the application.

Claims 1, 3, 8, and 10-15 have been amended.

Claims 2 and 9 have been canceled without prejudice or disclaimer. In making this cancellation without prejudice, Applicant reserves all rights in these claims to file divisional and/or continuation patent applications.

New claim 20 has been added in order to further define what the Applicant considers to be the invention. Applicant respectfully asserts that no new matter has been added.

Applicant respectfully asserts that the amendments to the claims add no new matter.

CLAIM REJECTIONS

35 U.S.C. § 112 Rejections

In the Office Action, the Examiner rejected claims 1, 8 and 15 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner contended that claims 1, 8 and 15 do not clearly define the purpose of the claimed method and/or apparatus.

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Claim 1 has been amended to recite "an apparatus of cooling one or more portions of a die ". Claim 8 has been amended to recite "a semiconductor device package". Claim 15 has been amended to recite "a method of cooling one or more portions of a die".

Applicant respectfully asserts that these amendments render claims 1, 8, and 15 proper under 35 USC 112 and request that the rejections be withdrawn.

35 U.S.C. § 102 Rejections

In the Office Action, the Examiner rejected claims 1-19 under 35 U.S.C. § 102(b), as being anticipated by Cordes et al. (US 6,614,109).

Applicant respectfully traverses this rejection of claims 1-19 in view of the remarks that follow.

As is well established, in order to successfully assert a prima facie case of anticipation, the Examiner must provide a single prior art document that teaches every element and limitation of the claim or claims being rejected.

Each of amended independent claims 1, 8 recite a plurality of cold conductive elements embedded in an active side of said die to absorb heat from said active side (emphasis added). Independent claim 15 recites absorbing heat from an active side of a die by a plurality of cold conductive elements embedded in said die (emphasis added). It is respectfully asserted that Cordes et al. does not teach or fairly suggests at least this feature of the claimed invention. Specifically, Cordes et al. describes contact regions 320 which are formed implanted in a thermal sink 314 formed at a front side 304 of a semiconductor substrate 302, while integrated circuits 309 are formed on a back side 304 of substrate 302 (Column 4, lines 21-57, Figs. 2A and 2C). Thus, in contrast to the cold conductive elements which are embedded in an active side of the die, as recited by claims 1, 8, and 15 of the present invention, the contact regions described by Cordes et al. are separated from the integrated circuits by a thermal sink.

Therefore, Applicant submits that Cordes et al. fails to teach or fairly suggest all elements of claims 1, 8 and 15, at least because this reference does not teach a plurality of cold conductive elements embedded in an active side of a die.

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Thus, it is respectfully requested that the rejection of independent claims 1, 8, and 15 under 35 U.S.C. 102§(b) in view of Cordes et al. be withdrawn.

Furthermore, it is respectfully submitted that independent claims 1, 8 and 15 are patentable, and thus allowable, over the prior art references on record and any combination thereof. In this regard, it is noted that the distinguishing features of independent claims 1, 8, and 15, as discussed above, would not have been obvious at the time the invention was made to a person skilled in the art, in view of Cordes et al., alone or in combination with any other cited references.

Claims 3-7 depend, directly or indirectly, from independent claim 1 and incorporate all the elements of this claim. Claims 10-14 depend, directly or indirectly, from independent claim 8 and incorporate all the elements of this claim. Claims 16-19 depend, directly or indirectly, from independent claim 15 and incorporate all the elements of this claim. Therefore, it is respectfully submitted that claims 3-7, 10-14, and 16-19 are patentable, and thus allowable, at least for the reasons set forth above.

Remarks to New Claim

New claim 20 recites "wherein said plurality of p-type elements and n-type elements are embedded in said substrate". Applicants respectfully assert that no new matter has been added. Specifically, new claim 20 is supported at least by Fig. 2 and/or paragraph [0015], as originally filed.

New claim 20 depends directly from independent claim 1 and incorporates all the elements of this claim. Therefore, it is respectfully submitted that new claim 20 is patentable, and thus allowable, at least for the reasons set forth above.

In view of the foregoing amendments and remarks, the pending claims are deemed to be allowable. Their favorable reconsideration and allowance are respectfully requested.

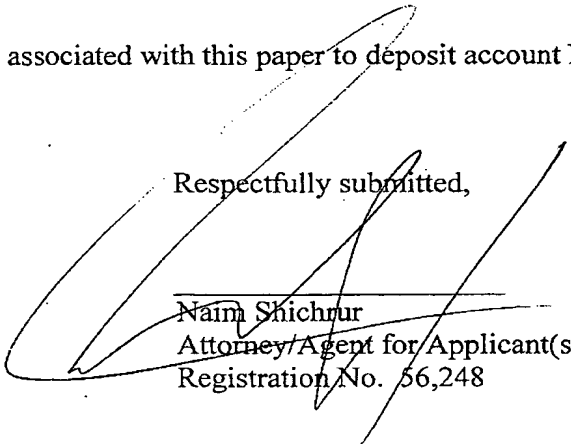
Should the Examiner have any question or comment as to the form, content or entry of this Amendment, the Examiner is requested to contact the undersigned at the telephone number below. Similarly, if there are any further issues yet to be resolved to advance the

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prosecution of this application to issue, the Examiner is requested to telephone the undersigned counsel.

Please charge any fees associated with this paper to deposit account No. 50-3355.

Respectfully submitted,


Naim Shichur
Attorney/Agent for Applicant(s)
Registration No. 56,248

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Pearl Cohen Zedek Latzer, LLP
1500 Broadway, 12th Floor
New York, New York 10036
Tel: (646) 878-0800
Fax: (646) 878-0801